VSTOP Report
to
The Indiana Election Commission

MicroVote EMS 4.3

Application for Voting System Certification
Reevaluation of a modification to a Certified System

July 22, 2019

Indiana Voting System Technical Oversight Program (VSTOP)
The Bowen Center for Public Affairs
Ball State University

Voting System Certification Recommendation Report

Name of Vendor	MicroVote General Corporation
Address	6366 Guilford Ave, Indianapolis, IN 46220-1750
Contact Information	Bernie Hirsch, (317) 257-4900
Application For	Reevaluation of a modification to a Certified System
Model Number	MicroVote EMS, Version 4.3
Type of Voting System	Direct Record Electronic (DRE) and Absentee Optical Scan
Application Date [Attachment 1]	May 31, 2019
Escrow Agent and Deposit Date	Pro V&V– May 30, 2019 Revised on July 22, 2019
Voting System Testing Lab (VSTL) [Attachment 2]	Pro V&V, 700 Boulevard South Suite 102, Huntsville, AL 35802

System Overview:

This voting system was field tested at Ball State University on June 26, 2019 by the VSTOP team. VSTOP conducted tests on the MicroVote EMS Version 4.3 system with a Voter Verifiable Paper Audit Trail (VVPAT) component. The tests included verification of all required elements of the Indiana Code regarding voting systems as well as an ADA compliance affirmation from the vendor. Mock elections, including the IED approved test case scenarios for straight party voting, were conducted on the voting system and VVPAT component.

VSTOP also reviewed the VSTL test report submitted by MicroVote. This system is compliant with the Voluntary Voting System Guidelines (VVSG 1.0 (2005)).

The VVPAT attachment to the MicroVote EMS Version 4.3 system allows a voter to verify votes marked on the DRE by screen with the use of a printed record. This printed record appears on a paper roll behind a glass window and cannot be touched by the voter. The voter does have the opportunity to correct their selections when they view the printed record. In the case of a visually impaired voter, the DRE will recite the content of the electronic screen to the voter. In either case, the official ballot for the system is the electronic record in the DRE once a vote is cast. To benefit the reader, some photographs of the MicroVote VVPAT may be found in Attachment 3.

Scope of Certification (a list of all voting system components, with limitations therein):

Hardware

Component	Version
Infinity VP-1	Rev C/D05
VVPAT-1	Rev A
Chatsworth	ACP2200
Gemplus Smartcard	N/A
Dell Desk/Laptop	**Minimum Requirements:** **Processor:** 1 gigahertz (GHz) or faster compatible processor or System on a Chip (SoC) **RAM:** 1 gigabyte (GB) for 32-bit or 2 GB for 64-bit **Hard drive size:** 32GB or larger hard disk **Graphics card:** Compatible with DirectX 9 or later with WDDM 1.0 driver **Display:** 1024x768
Seiko Instruments Printer w/Power Supply	DPU-3445
EMS Download Cable	N/A
DoubleTalk LT w/Radio Shack Headphones	N/A
USB Smart Card Reader w/Stand	PC USB TR PIV HWP109380 B

Software/Firmware

Component	Version
EMS	4.3.6.0
Infinity Panel	4.30-014 (4.30 displayed)
Microsoft Windows 10 Professional	1809
MS SQL Server 2016	N/A
Doubletalk	0212

Findings:

The VSTOP field test on June 26, 2019 was conducted on the MicroVote VVPAT prototype. The final production model of the VVPAT will be slightly different that the one tested but not functionally different. The features which will be different include (1) finger grips on the VVPAT enclosure for ease of handling and (2) slight repositioning of the security bracket riveted underneath the bottom of the RJ45 port on the VVPAT so the wire tie security seal would better cover the RJ45 connector and prevent its possible removal during voting. The testing lab, Pro V&V, stated that these additional *De Minimis* features would not impact the VVPAT's functionality once deployed in the field and may be found in Attachment 4.

Additionally, during field testing, an issue was discovered concerning the printing of straight party selections on the VVPAT. It was noted that the way selections are handled by the VVPAT could potentially cause confusion for the voter. To remedy this, MicroVote updated code to remove office titles associated with straight party

selections. Pro V&V determined that the source code modification was minimal and deemed it *De Minimis*. This evaluation may be found in Attachment 4. Before and after pictures of the VVPAT printouts can be found in Attachment 5 with further explanation by the vendor in Attachment 6. A prototype image of the VVPAT with finger grips, an image of the VVPAT prior to the case modifications from field testing, and a description of the changes and modifications, from the vendor, can be found in Attachment 7.

During the test there were two DRE booths utilized by the vendor, one for ADA voters and one for other voters. When seated at the ADA booth, the VVPAT printout was easy to read. However, when standing at the non-ADA booth it was harder to see the VVPAT printout due to the angle of the unit. It was verified with the vendor that the VVPAT box could be tipped back slightly to improve the line of sight to the printed roll of paper without this impacting any unit functionality.

Recommendation:

On the basis of VSTOP's review and evaluation, we find that the voting system referenced herein (and with the Scope of Certification and the limitations therein) meets all the requirements of the Indiana Code for use in the State of Indiana. This finding includes compliance with the legal requirements for voters with disabilities.

It is recommended that the vendor monitor the functionality of the VVPAT component in all respects including, but not limited to, the usability of the component for voter line of sight visibility in the standing position in front of the voting booth. The vendor should also provide appropriate training and troubleshooting procedures to the counties on the use and maintenance during elections such as refilling a roll.

Jay Bagga

Dr. Jay Bagga, Co-Director
Date: July 22, 2019

Bryan Byers

Dr. Bryan Byers, Co-Director
Date: July 22, 2019

List of Attachments:

[1] IEC-11 application dated May 31, 2019
[2] VSTL (Pro V&V) Report on Verity Voting 2.3 dated May 30, 2019
[3] MicroVote Infinity Voter Verifiable Paper Trail Prototype PowerPoint presentation
[4] Project Letter from PRO V&V dated July 15, 2019
[5] Before and After Photos of MicroVote Software Modifications on VVPAT Printouts
[6] RE: MicroVote EMS 4.2 Voting System VVPAT Modifications Question email dated July 17, 2019
[7] VSTOP VVPAT Modifications email dated July 17, 2019